

REMARKS

Claims 1-4, 9, 11-18, 35 and 36 are pending in the captioned application. Claim 36 stands objected under 35 U.S.C. §112. Claims 18 and 35 stand rejected under 35 U.S.C. §102. Claims 1-3, 6-8, 11, 13-15, 18 and 35 stand rejected under 35 U.S.C. § 103.

Claims 12-14 and 17 have been canceled.

The Applicant wishes to thank the Examiner for the telephone interview conducted August 18 with the undersigned.

New Claims 37 - 40

Support for new claim 37 is found in the specification at page 4, lines 9 - 20. Claim 37 is allowable at least because it depends from an allowable base claim.

Support for new claim 38 is found in the specification at page 3, line 32 - page 4, line 8. This claim is dependent from claim 1, and requires the further exclusion from the bridge section of any metal layer having a melting temperature that is higher than the vaporization temperature of the semiconductor material, thus providing a distinction over the applied art. This requires the exclusion of a layer of tungsten (and layers of other high-melting metals) from the titanium bridge on the semiconductor material, an arrangement not shown or suggested in the prior art for reasons discussed below in relation to claims 1 and 18.

New claim 39 is intended as an alternative to the subject matter of claim 18, and is supported by the specification, and is allowable, for the same reasons that claim 18 finds support and is allowable, discussed below.

New claim 40 is supported in the specification at page 6, lines 17-29. The basis for its allowability is discussed below.

Rejection of Claims 18 and 35 Under 35 U.S.C. §102

Claims 18 and 35 stand rejected under 35 U.S.C. §102 as being anticipated by PCT Publication WO 9742462 to Martinez-Tovar ("Martinez-Tovar (PCT)"). The rejection is based on the Examiner's refusal to acknowledge the exclusionary effect of the "consisting essentially of" language in claim 18, asserting "absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, 'consisting essen-

tially of' will be construed as equivalent to 'comprising.'" In the Response to Applicant's previous arguments, the Examiner asserts, "the applicant's specification does not reveal disclosure expressly excluding tungsten. Moreover, applicant's assertions of what is included or excluded from the claims must find explicit support in the specification." The Examiner cites PPG Industries Inc v. Guardian Industries Corp, 48 USPQ2d 1351 at 1355 (Fed. Cir. 1998) ("the PPG case") in support of this assertion, quoting from that case, "PPG could have defined the scope of the phrase 'consisting essentially of' for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention." In the Examiner's Interview Summary, he explains that "consisting essentially of" is not be accorded any weight because "the specification does not disclose the intent to exclude the presence of ALL tungsten", and because "there are other metals that would materially affect the applicant's invention but are not disclosed in the specification."

The stated grounds of rejection are respectfully traversed. The specification is clear about excluding a layer of tungsten, and provides a specific example of an embodiment that is free of tungsten. A layer of tungsten, as shown in the Martinez-Tovar reference, is described as problematic. "Consisting essentially of" excludes a layer of tungsten. A resulting basic and novel characteristic of the invention is also clearly disclosed: the bridge section comprises titanium on semiconductor material and is free of a layer of metal that melts at a temperature above the vaporization temperature of the semiconductor material. As a result, the metal of the bridge section melts by the time the semiconductor vaporizes and so does not impede the plasma of the semiconductor material from impinging on a charge of energetic material. See the specification at page 3, line 32 – page 4, line 8. In view of this disclosure, it not understood why the Examiner fails to find an indication in the specification of what is excluded by "consisting essentially of." The Examiner is reminded that there need not be *in hanc verba* support in the specification (see, e.g., In re Wright, 9 USPQ at 1651, citing In re Smith, 481 F.2d 910, 914, 178 USPQ 620, 624 (CCPA 1973); 176 USPQ 336). An Applicant is not obliged to expressly identify in the specification everything that is excluded by "consisting essentially of." Rather, it is sufficient that the disclosure makes clear that the claimed invention is achieved without the excluded matter. See Ex parte Parks, 30 USPQ2d 1234 (BPAI 1993) (reversing a rejection of 'consisting essentially of' to exclude catalysts for lack of support, saying "Throughout the

discussion which would seem to cry out for a catalyst if one were used, no mention is made of a catalyst."'). The Examiner's reliance on the PPG case is not understood and appears to be misplaced. The quote seems to suggest that the court refused to attribute meaning to a "consisting essentially of" phrase due to lack of support in the specification, but that is not what happened in the PPG case. Rather, the court gave full effect to a contested "consisting essentially of" claim limitation, and acknowledged a patent applicant's right to provide its own definition of "consisting essentially of" in the patent application or prosecution. See the PPG case, 48 USPQ2d at 1355 (In Water Technologies Corp v. Calco Ltd., 850 F.2d 660, 666, 7 USPQ2d 1097, 1102 (Fed. Cir. 1988), for example, this court looked to the prosecution history of a patent to determine whether an unlisted ingredient was excluded from the scope of a "consisting essentially of" claim."').

The cited reference (Martinez-Tovar (PCT)) only shows igniter devices having a layer tungsten on the bridge section that would be excluded by the "consisting essentially of" limitation of claim 18. Accordingly, the stated limitation provides a patentable distinction over the applied reference. The Examiner's assertion that "the specification does not disclose the intent to exclude the presence of ALL tungsten" does not seem relevant, since the specification clearly supports an embodiment with no tungsten and, in any case, a complete exclusion is not necessary to provide a patentable distinction from the cited reference.

In the telephone interview, the Examiner said that "consisting essentially of" was not being given exclusionary effect because the Examiner has only seen that phrase used in composition claims and method claims. Although this ground of rejection is not set forth in the outstanding office action, the Applicant will respond by pointing out that the well-established meaning of "consisting essentially of" is not limited by any authority to composition or method claims, and that the phrase is used in claim 18 for its usual effect, to exclude certain materials. For a case in which "consisting essentially of" was used to define an apparatus, the Examiner is referred to AK Steel Corp. v. Sollac, 68 USPQ2d 1280 (Fed. Cir. 2003).

In addition, the Examiner said in the interview that the appearance of the word "comprising" in the body of the claim created doubt as to whether "comprising" then "trumped" the "consisting essentially of" transition phrase. Claim 18 has been amended to

avoid the use of "comprising" after the transition phrase "consisting essentially of," rendering moot this ground of rejection.

The Applicant objects to the Examiner's maintenance of grounds of rejection not set forth in writing in the office action, and requests that all extant grounds of rejection be set forth explicitly so that the office action is complete, so that the Applicant is aware of whether or not a ground of rejection has been overcome and can fully respond to those that are outstanding and, if necessary, prepare for appeal. See MPEP 707.07 (8th Ed. Rev. 2, May 2004, citing 37 CFR 1.104(d) ("The examiner's action will be complete as to all matters..."); MPEP 707.07(g) ("The examiner ordinarily should reject each claim on all valid grounds available...." (to avoid piecemeal prosecution)).

A. Rejection of Claims 1-3, 6-8, 11, 13-15, 18 and 35 Under 35 U.S.C. §103

The above-identified claims stand rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent 4,976,200 to Benson et al. in view of the abstract of DE19721929 to Weiss ("the Weiss abstract").

(i) The Examiner has failed to establish that the citation of the Weiss abstract is proper.

The Examiner maintains the citation to the Weiss abstract over the Applicant's objection. Referring to a version of the Weiss abstract attached to the Interview Summary, the Examiner asserts that the Weiss abstract has a publication date of January 28, 1999.

The Applicant points out that the publication date asserted by the Examiner does NOT appear to be the publication date of the cited Weiss abstract, but rather part of the content thereof indicating the publication date of the underlying document, which the Examiner is not citing. The only apparent publication date of the cited abstract is in the footer of the copy provided: August 24, 2005. Since the Examiner is not relying on the underlying document, the content of which is different from the abstract, and since the Examiner has not shown that the Weiss abstract qualifies as prior art, the citation of the Weiss abstract should be withdrawn. Furthermore, the Examiner's reliance on the Weiss abstract rather than the underlying document is improper for reasons previously argued.

(ii) The Weiss abstract is not properly combinable with Benson.

(a). The references teach away from the proposed combination.

The Weiss abstract provides no indication that the hydride bridge would function as described without a thermal insulator directly beneath it. In fact, Weiss '929 explicitly criticizes Benson for not disposing the metal layer directly on a thermal insulation layer, and so teaches away from the asserted combination. In addition, there is a lack of any suggestion in the art for the asserted combination or any basis for a reasonable expectation that such a combination would yield successful results.

Furthermore, the conductivity of TiH is much lower than that of tungsten, so to replicate the Benson device with TiH in place of tungsten while achieving the same resistivity as the tungsten provided would require forming a hydride bridge that is much larger than the tungsten bridge, and the larger hydride bridge would require much greater initiation energy than described by Weiss. This would result in a loss of the energy savings sought by Weiss '929. Therefore, another reason that the proposed combination is improper is that it would defeat the purpose or asserted advantage of the Weiss '929 disclosure.

(b). Different modes of operation.

In the Interview Summary, the Examiner asserts that the fundamental differences between the way the device disclosed by Benson and that disclosed by the Weiss abstract function do not matter because the rejected claims are drawn to an apparatus rather than a method. This assertion misses the point, which is that the law specifically provides that a combination that would require a change in the basic mode of operation of one of the references is improper. See MPEP 2143.01. The subject matter of the claim under consideration has no bearing on whether the two references can properly be combined; the references are not properly combinable because of what they themselves disclose and the nature of the asserted combination, apart from what the claim says.

The Weiss abstract pertains to an air bag initiator consisting of a titanium or hafnium hydride layer deposited directly on an insulating layer of silicon dioxide, which is not a semiconductor material. The mode of operation would be understood by one of skill in the art as explained in the underlying document: when current is applied to the bridge, it heats up until it forms a plasma itself. The Weiss abstract fails to show an igniter device with a semiconductor bridge or a layer of titanium thereon.

Benson shows tungsten on a semiconductor bridge (silicon) layer beneath it. Joule heating heats the tungsten until the silicon becomes conductive, after which the silicon conducts and plasmatizes itself along with the tungsten to contribute to the plasma (see column 5, lines 38-50). This is a fundamentally different mode of operation than the direct formation of plasma by metal hydride un-aided by plasmatized semiconductor material, as required by the Weiss abstract. Since employing the TiH in Benson's device in the way proposed by the Examiner would require a significant change in the mode of operation of either the TiH or the Benson device, the references cannot properly be combined (see MPEP 2143.01).

For these reasons, the applied references fail to render obvious an igniter as defined in claim 1 or 18, both of which define igniters having a bridge made from a semiconductor material on which titanium is disposed without tungsten.

Claim 36

Claim 36 has been amended to address the stated objection and is now believed to be in allowable form.


New Claim 40

Claim 40 is patentable because it defines a novel method for operating an igniter that comprises a layer of metal comprising titanium on a semiconductor bridge. The method involves melting the layer of metal on the bridge before vaporizing the semiconductor material of the bridge. None of the cited references disclose or suggest such a mode of operation for such an igniter.

Each of the stated grounds of rejection have been addressed or traversed. Reconsideration and re-examination of the pending claims is respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise,
please charge them to Deposit Account No. 06-1130.

Respectfully submitted,


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